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IBM

# *Enabling knowledge management in retail*

*IBM solutions for business integration*

e-business

## Executive overview

Immediate and personalized fulfillment is the key to winning and retaining loyal customers. Retailers understand this intimately. Historically, successful retailers knew their customers by name, spending habits and product preferences and used this knowledge to provide superior personalized service.

But it is becoming increasingly difficult to maintain customer intimacy in a multi-channel retail world. Customers expect the same personalized treatment when buying through a store, kiosk or Web site. The challenge today is to deliver this loyalty-building attention while achieving the scale and efficiencies demanded by the multi-channel environment. Unless a retailer can consistently overcome this challenge, consumer loyalty programs, customer relationship management (CRM) and even enterprise resource planning (ERP) systems will have limited impact on profitability.

Many retailers already capture the information they need – what's moving, who's buying it, what else is in the basket and which promotions may have influenced the sale. But they have not been able to fully use that information to drive improved business results. The ability to use information becomes critical to obtaining competitive advantage as the Internet opens up new channels to consumers through e-commerce and enables realtime communication with supply partners.

Why have retailers been unable to leverage all their data? Because as growing, innovative and fast-moving retailers continually adapt to consumer demands, there is little time to align new processes with business strategy. Their information technology (IT) infrastructure reflects – and even perpetuates – this lack of strategic alignment. Yet with the rapid expansion, diversification and experimentation driven by current market conditions, the need for retailers to align their IT infrastructure has never been more pressing. IBM helps retailers worldwide manage knowledge across the entire enterprise to provide greater responsiveness and greater value to customers.

Consumer empowerment is on the rise. Using the Internet and other communication technologies, consumers are able to conduct extensive research and then make purchases at their convenience. Consumers have become more accessible through new channels, but in return they are demanding 'the right product at the right price, right here, right now no matter where they shop.'

Meanwhile, retailers struggle to push profits ever higher to meet shareholder and analyst expectations. Constrained by static demographics, growth has become a zero-sum game: to gain a sale, someone will have to lose a sale. No longer can all customers be considered equal. Acquiring, maintaining and deepening relationships with a retailer's best customers becomes vital. Particularly in light of the increasing variety of players vying for wallet-share, from local established specialty retailers and aggressive global mass merchandisers, to quick-moving e-commerce start-ups and manufacturers selling direct to consumers.

Retailers' efforts to fulfill customer expectations for tomorrow are complicated by the need to adopt strategies that can improve margins and fend off competitive threats today. Retailers are pursuing different approaches to achieve those ends, including global expansion, product diversification, mergers and acquisitions, and improved cost competitiveness. While such strategies compel retailers to see the wider business implications of technology, one approach is making IT infrastructure a critical component of long term retail success – multi-channel retailing.

## Multi-channel retailing – a new business requirement

Created out of the need to satisfy the 'connected' consumer, multi-channel retailing is emerging as a business necessity. Retailers are expanding on their existing brick and mortar channels to provide shopping any time and anywhere using kiosks, catalogs, direct marketing, Web selling, call centers and personal communication devices. But implementation of multiple retail channels also presents significant challenges. It not only requires retailers to expand beyond their traditional areas of expertise but to embrace a business model potentially disruptive to their traditional way of doing business.

The previous retail paradigm focused on using technology to deliver products with peak efficiency: high throughput, rapid turnover and increased velocity. While efficiency remains a worthy objective, multi-channel retailing changes the game. Its goal is to capture and retain the most profitable customers for a lifetime.

This entails that retailers now use technology to recognize their best customers and provide a consistent, quality service experience no matter where consumers decide to shop. To accomplish this, retailers require an IT infrastructure that completely connects all channels. For instance, consumers making a purchase on an e-commerce site should be able to pick up their purchase at a store of their choice or have it shipped to their doorsteps. And if they decide to return a purchase, they should be able to return the merchandise to a store even if that product is available only from a different channel.

Creating such transparency across channels presupposes the need for free flow of information. However, information stored throughout the retail enterprise is rarely integrated. To successfully execute a multi-channel strategy, retailers need to bring together different types of data, including the following:

• **Customer data** – point-of-sale is giving way to point of service. Every contact with a customer gives retailers the opportunity to demonstrate the value of their services and increase customer loyalty. To accomplish this, retailers need to know who their customers are and whom they are serving in realtime – no matter the channel. For instance, a shopper at a consumer electronics retailer makes a $200 purchase of software that will go on sale the next week. The sales terminal signals that the customer has spent more than $3000 since the first of the year and authorizes the salesperson to inform the customer of the impending sale and offer an immediate discount. Although a competing superstore opens in the area, the customer still shops where he was treated as a preferred customer.

• **Market data** – Retailers need to know what is and is not selling. They need to be able to aggregate data from across channels to spot seasonal and overall trends and conduct assortment planning. Market data can then be combined with consumer data to form a complete picture of customer requirements.

• **Operational data** – Retailers need to be able to capture all the details of internal performance to measure profitability and quantify responsiveness to customers, as well as information on the supply chain to ascertain and respond to customer needs in realtime. Guyenne & Gascogne uses their understanding of operational data to reduce out of stocks at its grocery hypermarkets and supermarkets throughout the southwest of France. By tracking sales on an individual store basis and creating simple, automatic rules for response, the replenishment system is able to adjust to local demand more quickly and accurately. The system has improved product availability on the shelf from 88% to 98.5%.

## The challenges of uniting disparate data

To coordinate customer, market and operational data across the enterprise, retailers have come to rely on a patchwork of multiple applications running on different systems using disparate interfaces and protocols to capture, store and maintain data. This requires customized links created using time-consuming, hand-written code.

Retailers have sought to reduce some of this complexity by implementing centralized, integrated CRM systems. Yet building effective CRM systems across the enterprise presents a number of interlocking challenges as well.

Although retailers gather copious amounts of basket data from point-of-sale (POS) terminals, retailers must match that information up with individual customers over multiple visits. When they are able to do so, retailers obtain useful knowledge that can drive decisions. For example, a Safeway (UK) store carrying a particular type of goat's cheese found the product was generating low revenues, was slow to turn over, and had a slim profit margin. Before dropping the item, however, Safeway analyzed the customer-level data and found the goat's cheese showed up consistently in the baskets of the store's very best customers. The 'unprofitable' but hard-to-find cheese was actually a differentiator! Looking at stores only by store or by hour, the cheese would have been gone – and perhaps so would some of the highest value customers.

Obtaining detailed customer information requires strategies to facilitate collection of information, such as frequent shopper programs, loyalty card programs, club memberships, holiday promotions and other techniques. Retailers then must develop similar programs for each of their retail channels. Once retailers find the best method for discovering customers' demographic and lifestyle data, retailers must ensure consistency of information across the enterprise.

CRM technology varies considerably worldwide. Some locations may use older 'green screens,' while others are taking advantage of high-powered, graphics-based programs. Added to the challenge of unlike systems is the drain of collecting data from multiple points and maintaining its accuracy. Keeping accurate, up-to-the-minute customer profiles requires retailers to spend time and money 'cleaning up' the data pool: fixing spelling errors, removing bad addresses or phone numbers, and updating customer information as it changes over time.

After data is collected – from multiple channels across the entire enterprise – it must be analyzed. These applications vary from location to location within a given company, from simple statistical trend-spotting to sophisticated, multidimensional analysis. As a result, some parts of there tail organization will be able to apply customer data more effectively, simply because they can draw more focused conclusions. What is needed is a way to link all of the miscellaneous databases and data analysis systems. Not only will redundant information be eliminated, but retailers will be able to obtain a consolidated view of their customer with which to make better marketing, merchandising and store planning decisions.

Yet applying customer knowledge in the real retail world is perhaps the most challenging step. When customer data fuels marketing, merchandising and store-planning decisions, retailers may have to abandon traditional processes or do things differently than they have done for years. Which underscores the importance of capturing a wealth of customer information from multiple access points, and consolidating it to create the most accurate profile possible.

## Tying ERP to the CRM systems

While CRM provides external data on customers and markets, internal operational data from business intelligence systems is also critical to knowledge management. In particular, ERP encompasses essential data from business management functions, such as human resources, accounting and general ledger, as well as from merchandise operational applications, such as merchandise planning, inventory, logistics, category management and assortment planning. But without direct access to the ERP, that valuable information is not available. And linking non-ERP or different vendor CRM applications to an existing ERP can be very time consuming and expensive.

Furthermore, ERP typically does not include the specialized applications needed to manage merchandising, logistics and other aspects of new distribution channels. That means planning, pricing, and logistics based on information gathered through CRM is difficult to coordinate and execute across channels. Clearly, a more efficient and cost effective solution is required for bringing together ERP with CRM and other business intelligence applications.

## The need for business integration

The consumer's expectation that a retailer's products be available through multiple channels is creating new technology demands that traditional IT systems are unable to meet. And most retailers cannot afford to start over with reinvented systems. They want flexibility to connect disparate systems and let them communicate freely, allowing information to flow throughout the enterprise. They could benefit from a simple path by which they can connect more elements as their needs grow.

IBM believes the path is called business integration, and the first step is investing in an infrastructure that can support future growth and improve knowledge management system connectivity.

## Retail success is all about business integration

Business integration is the integration and alignment of current IT with business strategy. Too often in the past, technology and strategy evolved in response to different influences and followed different paths. The result: processes, information, applications and users disconnected from each other and from overall business strategies.

Resolving these disconnections requires addressing cultural differences and business process issues as well as IT. But without integrated information systems, efforts in other areas will fall short. Every aspect of multi-channel retailing success – continuity of service, consistency of experience, efficiency of operations – is contingent on the speed, reliability and efficiency with which customer-derived information is captured, processed, transmitted, shared and stored.

Whatever IT and business issues a business integration effort involves, the fundamental requirement is the same: capturing information and then transmitting it most efficiently and effectively to the points where it can be used to drive better business outcomes.
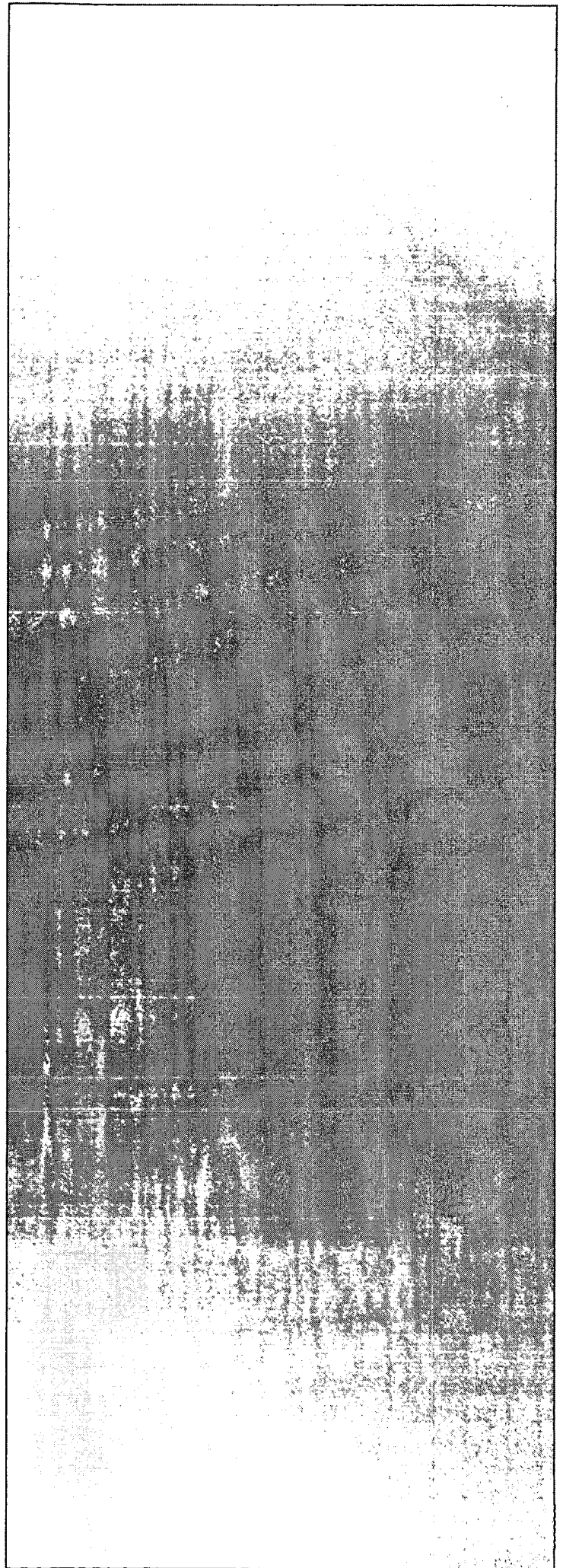
*Business integration solves today's issues – and meets tomorrow's challenges*

A prerequisite of knowledge management is an IT infrastructure capable of moving information across networks and among systems and applications that were not originally intended to work together. Using IBM solutions for business integration to build a basic infrastructure, retailers can capture information consistently from multiple access points; collect data across the enterprise to create consolidated customer profiles; share knowledge on a global scale with 24x7 availability; and use that data to drive better customer responsiveness.

While the costs of investing in infrastructure initially may be higher than continuing to piece together solutions, the strategic value will prove much greater in the long term. Not only will retailers eliminate the current limitations of their IT infrastructure, they will be positioned to quickly align their infrastructure to support a multi-channel retailing strategy.

## IBM MQSeries – connecting all systems in realtime

Each time a customer makes a purchase, retailers are presented with a service opportunity. Recognizing the customer at the point-of-sale and personalizing the offer demands quick and reliable transfer of information across diverse and sometimes incompatible POS, CRM and ERP systems. However traditional methods of overnight batch file transfers are error prone and too unresponsive for such a dynamic environment.

IBM MQSeries* is message-oriented middleware that provides assured realtime delivery of any kind of information, across all major networks and between 100% of the commercial systems on the market. MQSeries increases the reliability of data transfers and reduces bottlenecks created by incompatible systems, making MQSeries the ideal way to implement realtime, trickle-feed of information from different points of sale. Rather than programs communicating directly, they do so by sending messages via paired queues, which do the communicating. This enables programs to run independently. Multiple messages can be sent in parallel so, for example, several customer databases can be queried simultaneously to quickly identify a customer across different channels.

## IBM MQSeries Integrator – improving the sharing of information

Imagine all the computer systems and applications spread throughout the retail enterprise. Message queuing makes it possible to interconnect each one with all the others. But these connections would quickly become complex – perhaps even overwhelming.

IBM MQSeries Integrator offers the additional intelligence necessary to manage the messaging traffic among multiple CRM and ERP systems, across the whole network. MQSeries Integrator establishes a hub in the middle of all these systems, and each system has one connection to the hub. This simplifies the maze of connections dramatically. All messages pass through the hub, which can handle any volume of traffic-no matter how heavy or complex.

Because MQSeries Integrator provides realtime, intelligent rules-based message routing, and content transformation and formatting, business-critical applications – including CRM, ERP and others – can understand each other. Which makes it much quicker and simpler to distribute data relating to business events, and connect applications to build new business processes.

## IBM MQSeries Workflow – optimizing information flow

Delivering information to the point of decision across multiple channels adds complexity to every transaction. Even basic tasks may require interaction with many different applications, increasing the burden on POS and IT systems that are already straining. Information flow must be properly managed if it is to bring benefits to retailers – and not more headaches.

IBM MQSeries Workflow creates a graphic model of any and every business process in the organization, so retailers can find the optimal flow of information from application to application and then make changes one time from a single point of control instead of writing new code for each separate application.

Applications may reside on different systems, running on different computers and different operating systems – but MQSeries Workflow handles the diversity easily. By externalizing business process logic from applications, it establishes a profound new level of flexibility. Retailers can give precedence to processes and the tasks within them, rather than connectivity. And by automating flows – so people and applications get the information and work items they need at the right moment – retailers can shorten cycle-time and improve productivity.

## IBM WebSphere application server – providing a robust Web site

For smaller retailers, the ability to manage high-volume Internet traffic is not a primary concern. But for large, global chain retailers, sites may receive up to one million simultaneous hits. When each of these users wants to browse product information – or better yet, make a purchase online – high-speed transaction capability is a must. Without it, retailers run the risk of making customers wait to buy – which means lost sales and widespread dissatisfaction.

IBM WebSphere* is a set of software products that help retailers develop and manage high-performance Web sites. WebSphere eases the transition from static Web publishing to advanced e-business Web applications. With the help of MQSeries, WebSphere can deliver a fully integrated storefront-to back office architecture that brings the power of ERP applications and CRM to the Web.
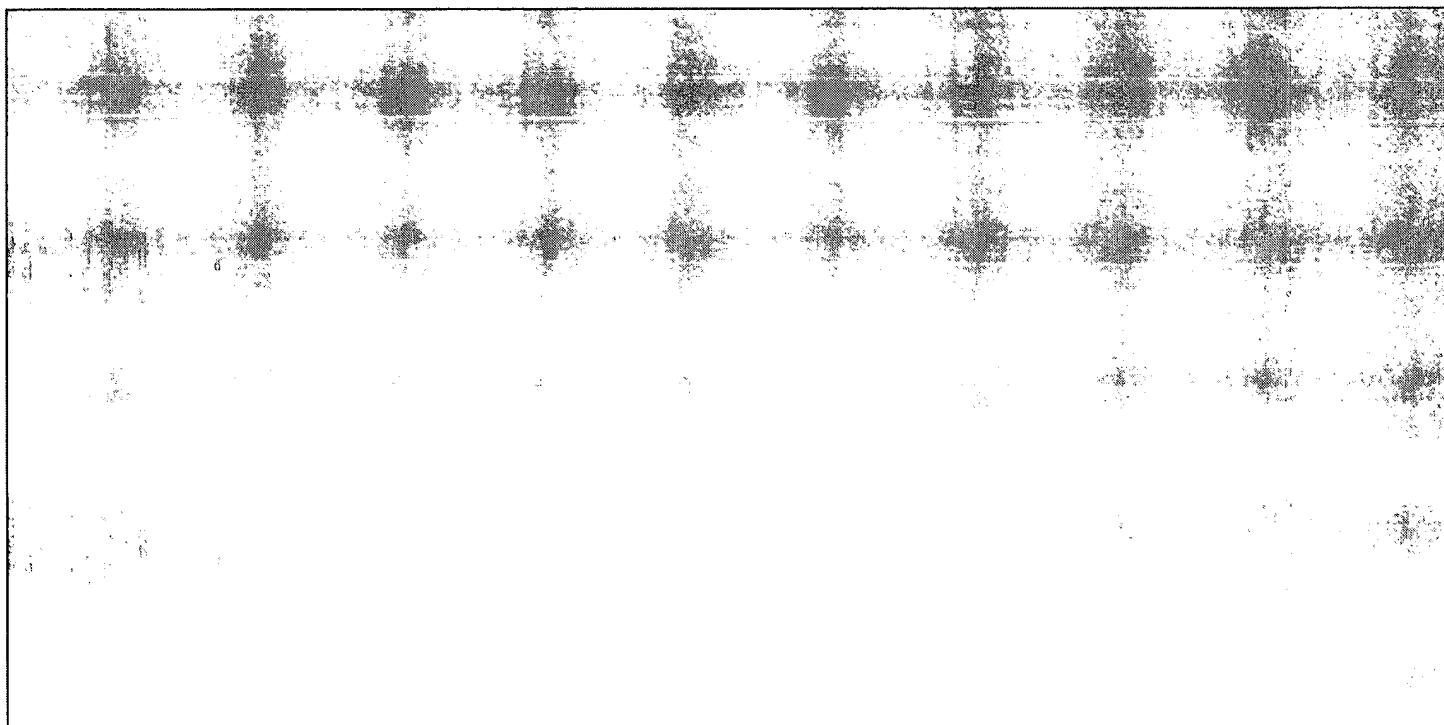
## IBM VisualAge for Java – putting operations data on the Web

Typically, the operational data provided by an ERP is only available to those within the enterprise who have direct access. To make information accessible to more people, retailers are looking for new Internet-based applications that can make ERP information available to a wider audience – including suppliers and customers.

IBM VisualAge* for Java** is an application development tool that speeds design, construction, testing and deployment of applications based on Java, the programming language of the Internet. Plus, VisualAge for Java protects existing technology investments by enabling seamless integration of new applications with old. Using VisualAge for Java, retailers can create applications that combine information from several ERP applications through a single interface. VisualAge for Java enables retailers to design specialized, user-friendly applications that extend the benefits of operational data to any point in the value chain.

## Lotus Domino – knowledge management for ERP applications

Many knowledge management activities are frequently ad hoc – reacting to changes in the business environment, communicating with colleagues, coordinating actions and analyzing business results. However, systems such as ERP are more transaction oriented, and are not designed to support functions that are primarily innovative, reactive or collaborative in nature.

IBM Lotus Domino* extends the reach of ERP data to facilitate knowledge management. Lotus is the world leader in e-mail. It is also the world leader in collaborative computing. Domino provides a team repository where groups of people can share information and gain knowledge. When integrated with ERP applications, Domino provides access to key operational data to employees, suppliers and customers. Domino also functions as an application development tool and workflow platform – plus it can act as a server for dynamic Web publishing.
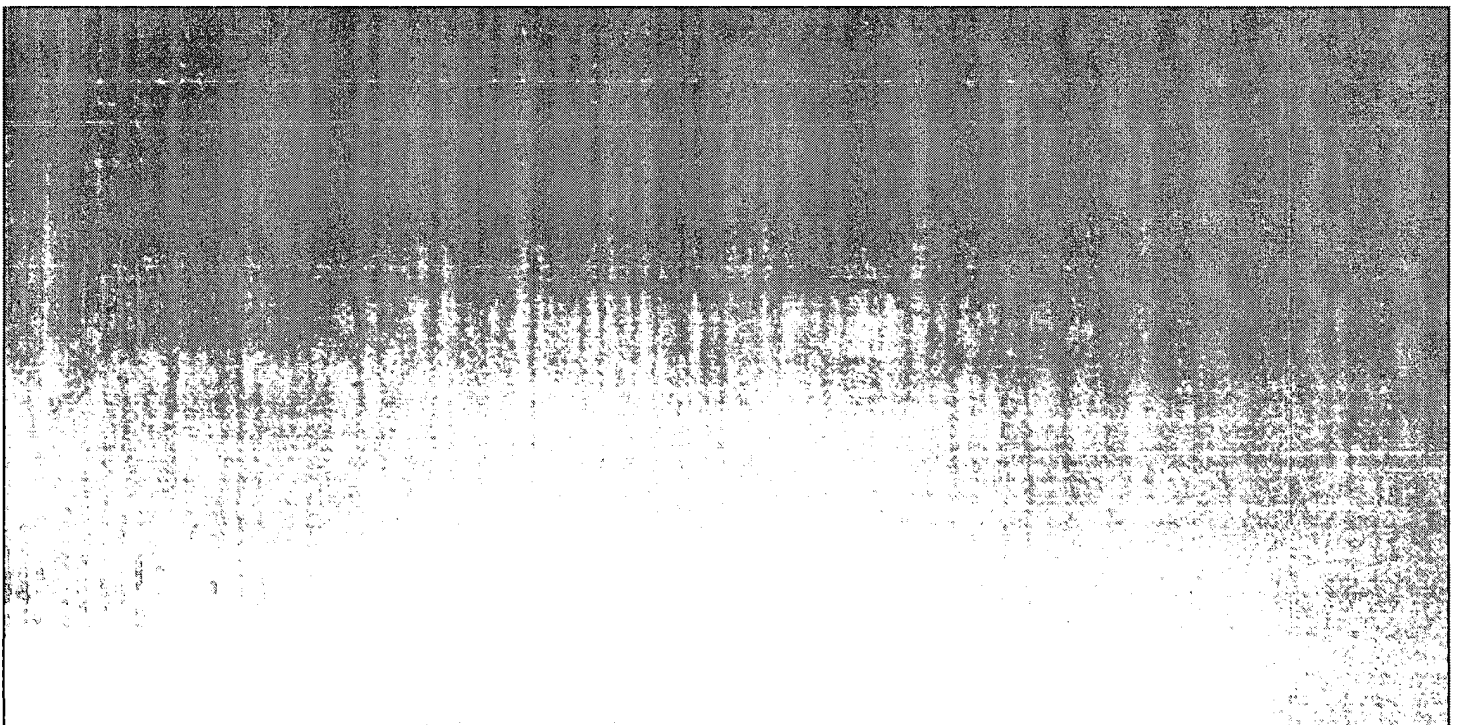
## IBM SecureWay – controlling access to critical information

To make full use of integrated knowledge management, retailers must master the ability to deliver critical information anywhere in the global enterprise. In many situations, this means establishing intranets for employees and extranets with business partners, top-tier customers and suppliers. This gives all parties the ability to interact with customer, market and operational data in an efficient and secure environment.

The IBM SecureWay* family is an integrated set of software products that provides the secure network platform for using knowledge management systems in a networked world. SecureWay enables retailers to find information anywhere in their network and allows that information to be updated universally, including duplicate information stored elsewhere. This ensures the consistency of information, and eliminates the risk of employees accessing out-of-date information or customers having to re-enter information in more than one location.

SecureWay also protects investments in existing applications. It refaces text-based 'green screen' applications, typical of legacy databases, with graphical user interfaces – while preserving the original underlying logic. SecureWay then makes these updated applications available over any network to deploy trusted applications to new parts of the enterprise or provide customers with a self-service capability. finally, SecureWay helps retailers establish secure virtual private networks that route traffic according to business priorities – enabling preferred customers to receive preferred service.

## Tivoli Enterprise – ensuring system reliability

With the need for multiple systems to work together to provide knowledge management, system reliability is a mission critical concern. When one system goes down, it can impact the efficiency of the entire organization. And system operability and availability are crucial to e-commerce, where a temporarily out of service Web site can rapidly result in lost sales.

IBM Tivoli* Enterprise minimizes system downtime. Tivoli allows multiple types of platforms to be managed from a single point, providing a total view of how each application interacts with the systems, databases, networks and applications in its environment. This comprehensive view improves understanding and facilitates the diagnosis, pinpointing and fixing of problems. And when common system faults occur, Tivoli can automatically take corrective action. Valuable IT personnel are then free to handle more serious situations.

IBM also applies its management solutions to help maximize the efficiency and effectiveness of a corporate service and support operation through Tivoli Service Desk. In addition, Tivoli Problem Management enables the service desk to track interactions and requests from users, resolve problems using leading edge-technologies, integrate with network and systems management platforms and empower users with direct access to corporate knowledge.

## Conclusion

The way in which retailers interact with consumers is fundamentally changing. Remaining responsive requires retailers to reach out to customers in new ways and better manage their knowledge. IBM uses its solutions for business integration to help the world's leading retailers align their technology with strategy. By integrating CRM and ERP systems, retailers are able to bring crucial enterprise knowledge to bear at critical points of decision.

To obtain maximum returns from these IBM solutions, retailers should choose service providers with expertise in ERP, supply chain management and IBM software. IBM Global Services and IBM Business Partners have extensive experience in each of these areas. They provide retailers with business management services to assist in the implementation and integration of operational systems with IBM solutions.

Together, IBM and its partners give retailers everything they need to align technology with strategy – and grow their business.

To find out more about the technologies and products behind the IBM solutions for business integration, visit IBM at: **www.ibm.com/software/big**

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